

# AVIATION

*The Oldest American Aeronautical Magazine*

FEBRUARY 14, 1927.

Issued Weekly

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Skiers being towed by airplane over Mirror Lake in the heart of the Adirondacks

*P & A Photo*

VOLUME  
XXII

## SPECIAL FEATURES

NUMBER  
7

THE DERULUFT BERLIN-MOSCOW AIRLINE  
SLOTTED WINGS IN PRACTICE  
HUFF DALAND CYCLOPS

GARDNER PUBLISHING CO., INC.  
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# Commercial flying in ALASKA



MR. NOEL WIEN

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LONG ISLAND CITY

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# AVIATION

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## With the Editor

Some years ago in aeronautical research circles there was quite an epidemic of discussion on the subject of compound wings and the possibilities of increasing the lift of airfoils by what may be termed artificial means. Numerous devices, including the Handley Page and Lorraineau slotted wings, were developed, and yet it seems impossible that so little has actually been done in practice towards applying the theory of wing superposition. The case of the Handley Page, nevertheless, the Handley Page wing appears to have very distinct possibilities and there is no doubt that Mr. Handley Page himself has a great deal of faith in these possibilities.

With a view to starting discussion on this subject, an article on the general features of the slotted wing and descriptive of two successful airfoils, on which the device has been applied, is published in this issue of *Aviation*. Structural problems are undoubtedly considerable in the practical application of the Handley Page wing, but, nevertheless, these appear to have been very satisfactorily solved, and it seems reasonable to expect that further examples of the slotted wing principle applied will appear in the future. One of the two examples described in this issue is machine incorporating, not only the type of wing design, but also the three-surface principle, is of particular interest.

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Find it there as the 8



**WRIGHT**

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FAIRFIELD, N. J., U. S. A.



# AVIATION

*The Oldest American Aeronautical Magazine*

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### Three-Engine Planes as Record Breakers

AT A time when there is a good deal of discussion on the pros and cons of three-engine planes—whether or not three-engine machines offer added reliability in operation, and the operation of three-engine planes and their normal load, greater capacity—it is of considerable interest to record a very significant load carrying record recently set up by a three-engine plane.

Recently, the new German Rohrbach Roland monoplane air liner of the Luft Hansa, fitted with three 230 hp 16 W. IV engines, made a flight carrying a load of 4,600 lb., over 100 tons, and thereby set up several World records. The pilot, by the name of Schreider, set out with the idea of setting up records and had previously arranged for official observation. His maximum speed, carrying this load, is recorded as 173.5 km/h or approximately 108.5 mph, and his average speed over a distance of 500 km (310 miles) was 165 km/h or about 102 mph.

These figures can only be considered as most encouraging for a three-engine commercial air liner. The machine, according to reports, was not especially prepared for this flight, the plane having been used by the Luft Hansa on regular scheduled air service since it has arrived and the extensive test of this commercial air liner has been completed.

Furthermore, any thought that the plane was loaded up excessively with ballast with a view to setting up load carrying records is entirely assuaded when it is recorded that on the same flight as endurance record was set up, for this load carrying capacity, of 4 hr. 16 min. about 14 tons, in excess of the previous record. This performance may well be taken to indicate that, while carrying this large load, a three-engine plane can be designed to maintain a wide cruising radius together with, of course, an added reliability over single or twin engine machines.

### The Atlantic Flight Attempts

WITH THE approach of Spring weather plans are again being made for the capture of the Orteig prize of \$25,000 for the first nonstop flight across the Atlantic Ocean between New York and Paris. At least one French attempt is likely and there seems every reason for believing that there will be stong competition on the American side. Recent news has it that Charles E. Byrd, who gained distinction in an attempt to the North Pole last year, in a Fokker F.2, is planning to attempt the Atlantic flight, and it is also generally known that Lieut. Niel Davis, who was promoted from flying ace last year, will also make an attempt, while there are likely to be other entrants also.

These long distance flights really do a great deal of

good for the development of aviation even though they are usually carried out under extreme conditions for, not only is they author the extreme possibilities, but without going to such extremes it would be difficult to advance the normal capabilities of flying.

### Airports and City Planning

IT HAS long been customary for city planning boards in controlling civic developments to look into the future and take cognizance of new methods of living and carrying on business. Thus, in the growth of a coastal city, if it is hoped to draw commercial shipping, the city development will be centralized to this end. It is reasonable to suppose, therefore, that in these modern times with each rapid progress being made in commercial aviation, city planning in the future will be influenced accordingly. For example, on the present geographic position in such that it may naturally be expected the center of all transport operations may well view as paramount all considerations which might be expected to attract commercial aviation. It will be clear, therefore, that the airport and sky planning take an entirely new aspect in the future.

The possibility that the airport will shift the trend of city development of the future is backed by John B. Boller, manager of the Department of Civic Development of the Chamber of Commerce of the United States, an address recently delivered before the City Planning Institute. In this connection, Mr. Boller said:

"According to the admissions which nature forced upon us, our fortunate members, we shall provide adequately for the new kind of business that is coming to us with the airplane. We doubtless shall, under stress of necessity, figure carefully how small an air field may be, how high the surrounding buildings may be permitted to rise, for we wish to bring the air harbor as far in town as possible, and to do this we shall have to go up in velocity. But as the railroad raised our other towns to bear their loads upon the lenses, so the airplane may induce them to face in a new direction, and those towns which make the most adequate provision are likely to reap a benefit."

Confidence towards this end has already been given by many cities. Owing to past growth, it is not always possible adequately to satisfy the requirements of an entirely accessible airport, and compromises have to be made. Mr. Boller's remarks, however, are timely and many small cities whose futures are bright would do well to give the aeronautic demands of commercial aviation a first thought in planning the trend of their civic development.

## The Deruluft Airline to Moscow

*In Successful Operation Since 1922.  
Russia Progress in Commercial Aviation.*

Mr. LESTER B. GARDNER.

This is the first of a series of articles by Mr. Gardner de  
scribing the principal features of Europe, Asia, and Africa.  
Mr. Gardner has 21,000 miles of travel under his belt, the foreign  
air routes and through air exercises comprising the greater  
part of his travel. He has been compelled to make a study of  
the various countries he has visited for the first time, and only his observations  
of an experienced air traveller, but facts that can be  
considered authoritative.—*Ed.*

WHILE THREE has always appeared to be great strength against the small antagonist of Moscow, this has not caused enough of the contempt of Brasilia, the Soviet Republic and its distance from the invasion masters of Europe, than any possible reduction by the United States.

Human Communication

There is an air line that gives a more complete number of operations than the Deutsche, the company which is operated and owned by the Soviet Russian Government, and the Deutsche line. Hence, the German air transport company, the Berolin, has been given a concession in air traffic between Germany and Soviet Russia, and vice versa. It was the idea of the Union of the German Soviet Republics that by shortening the time between Germany and Russia, it would assist the social and economic intercourse between the two countries. The new company formed in the Soviet Russian Government, the German group, which is now represented in the Deutsche, is the Deutsche Lufthansa, the Deutsche-Sowjetische Luftverkehrs-Gesellschaft, which has been absorbed by the Deutsche. The first route selected was

The creation of the first plane in Germany was used extensively. Many local officials were at the field and thousands of men and women gathered the pilot, his wife and the passengers with a great ovation. The pilot, Scott, was once times thought to be the boy in his father's records, which in Russia, as elsewhere, is one of the kindest forms of flattery.



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first flight and felt that it was the beginning of a new era in Russia. On the first flight a Russian diplomatic courier brought official missives from Berlin. Before the first onward, this courier had been required to carry a letter from Berlin to Moscow. The air mail reached the Soviet Capital in twenty

The next day, the first westbound plane left Moscow and flew to Kowshing, thus starting the regular air transportation service between Germany and Russia, which has now come

pleted its four years of operation. The distance from Moscow to Komsomol'sk in 1920 miles. Since 1926, the connection with Berlin has been in operation, and during 1926 the Dresdner has also been flying from Moscow to Charleroi, the Capital of the Ukraine, which is situated 880 miles to the South of Moscow. In 1922, two flights weekly were completed between Komsomol'sk and Moscow. In 1923 three flights weekly, and since 1924 daily service in both directions between Berlin, Komsomol'sk, Moscow, Charleroi has been operated.

### **Flying Equipment**

The Dyrkopp car for the Banffian service, Puffkin F III and Graflich V I types. Both are fitted with Mle 28 Rallie-Hauts angles. The sleepers which were specially constructed for the Banffian Auto Service, carry a pitch a macheine, from four to five passengers and fast for flying 550 miles. The plates contains a special baggage compartment and also a washroom.

The flying season from Germany to Berlin opens every year on May 1, and closes October 31. On account of climatic

ditions, continental living in Russia during the Winter is not of present necessity. The cold is very severe and is compensated by large down bags and warm clothes, which help to regulate living. Preparation, however, are being made that in the next future Winter living is to and from Russia to be done with specially constructed planes and instruments, prepared by a notable ground organization. The following table will illustrate the development of the German-Russian traffic since the beginning of the war on the basis of

#### Who You Want

2004-05 BUDGET				Total (\$ mil.)	Total exp. (\$ mil.)
2004-05	4,950	4,626	1,035	3,000	2,850
Change in estimated net position prior to recognition of changes in expenditure plans	(475)	(368)	(325)	(311,719)	(481,434)
Estimated net position prior to recognition of changes in expenditure plans	3,475	3,258	700	2,688	2,369
Estimated net position prior to recognition of changes in expenditure plans	3,475	3,257	2,080	4,650	10,979
Estimated net position prior to recognition of changes in expenditure plans	19,955	18,877	34,465	39,997	32,594
Estimated net position prior to recognition of changes in expenditure plans	43,941	41,459	65,226	73,143	60,647
Estimated net position prior to recognition of changes in expenditure plans	43,941	41,459	65,226	73,143	60,647
Estimated net position prior to recognition of changes in expenditure plans	—	—	3,800	—	3,800
Estimated net position prior to recognition of changes in expenditure plans	—	—	3,800	—	3,800

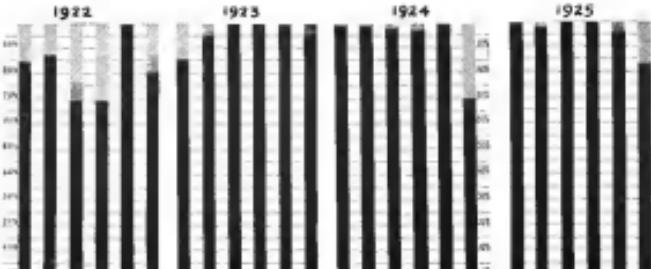


Deutsche and personnel of Drosdaff. 1. Dr. Peter Graeser, Brigadier. 2. Dr. Gustav Hirsch, Director of Moscow. 3. Dr. Erich, Director of Berlin. 4. Max Wohlert, who flew Mr. G. G. Davis to Moscow.

The equipment of the Drosdaff comprises ten airplanes and twenty engines. Eight of these airplanes are used on the Königsberg-Moscow line and two on the Moscow-Charkow line. Two planes are always kept in reserve, one at Moscow and one at Königsberg. The Drosdaff Company maintains the Königsberg-Moscow route with its own planes and own organization. The Moscow-Charkow line is operated in co-operation with the Russian Company, the Uralaviaefl. The Königsberg-Berlin section is a joint flight of the Drosdaff and Luft Hansa and the white line is operated in both directions each day, covering a total daily mileage of 2,655 miles. Nine pilots are employed on the white line, operating the same planes in case of emergency. Every plane also has its own mechanic who carries off flights in the plane

This has proved to be an excellent arrangement, the pilot and mechanic take great pride in the upkeep of their machines, have an incentive and are paid by the hour. An air mail flight can be made in 10 hours of the two pilots and one mechanic is always in reserve. During each month, every pilot flies 3,000 miles and undergoes a medical examination during every month that he is flying.

The line is established by both the Russian and German Governments. The economy has endeavored to make the air traffic pay its own way and losses with the development of the larger airplanes, and the use of the engines of less weight, or by using sharper fuel, that the line can be put on a commercial basis. On October 31, 1925, the Drosdaff completed



Registry of service of Birobzh. Black indicates completed flights, indicated when delay due to weather, not to flight diagnosis. White due to weather conditions; right to left diagnosis delay due to failure. Each column represents a month from May to October.



Night Flying School at Moscow Right at Tempelhof Field, Berlin (Deutsche Lufthansa)

air mail flying routes. These hundred and fifty thousand miles were covered on regular schedule during the flying season of 1925, May 1 and ending October 31. The passengers, freight, mail and express, totalled 1,000,000 miles during the monthly operations. The mechanical results were very satisfactory during 1925. During the period of operation, there were but 100,000 forced landings and in only one instance was there any damage to the planes. There was no damage to the engine. The regularity of the performance was 90%. In 305 trips during 1926, the Drosdaff carried 1,000,000 passengers and the total distance of 1,000,000 kilometers of baggage, mails and newspaper. The Deutsche Lufthansa has opened air transport planes between Germany and Russia to be followed by the Drosdaff Company, which hereafter will operate between Berlin and Moscow and, of only the Königsberg-Moscow section of the air route.

#### Other Russian Airlines

There have been a number of other air lines operating in Russia, some of which have maintained regular schedules for a number of years. There is the Aeroflot, which has not been operating for a number of years, the Drosdaff, the Uralaviaefl and the Zavodok. The Drosdaff operates all metal Dornier-Wal 2's and operates as far east from Moscow to Tarkhankut, connecting the Capital of Soviet Russia with Birobzh. In addition to this route, the Drosdaff has operated from Tashkent to Tiflis, on the Chinese frontier and operates from Tiflis to Tashkent. The Aeroflot operates from Tiflis to Erivan, that Capital of Soviet Russia. The Aeroflot air company has a capacity of 2,000,000 miles and operates 13 airplanes and covers 80 routes of 2,059 km. (1,280 mi.). It operates between Moscow and Kharkov, Kharman and Odessa, Kharman and Novor and Glazov and Kiev. In 1926, from April 15 to July 1, 131 flights were made and 208 passengers carried. Two round trips were made a week over each route.

Air mail management has been given to the Department of Posts and Telegraphs and military transportation to Russia by Aviation or the Society of Friends of the Air Fleet. This organization has over 500,000 chapters and over 4,000,000 members. Each member contributes a small sum and the income is used for the purchase of airplanes, for the Ger-

manair. With these contributions, a series of planes have been presented to the Soviet Government. To almost every important city of Soviet Russia are made by military planes mail and express and air mail demonstration. The propaganda work has created an enormous interest in all the activities in Russia and the surroundings of even the poorer peasants is a remarkable evidence of the growth of aviation in Russia.

#### Avalokhia Has 4,000,000 Members

The association was formed by combining the Society for the Advancement of the Air Fleet and the Society for the Advancement of the Chemical Industry which were originally formed in 1918 and 1920. The two societies were merged in 1924 under the name of the Avalokhia, under the leadership of A. Rodzit. The Directorate of the Avalokhia is composed of fifteen members. The organization has undertaken the task of popularizing the results and progress in chemistry and aviation, special attention being given to propaganda stressing the importance of flying. That the Avalokhia has been successful is shown by the fact that in the course of a few years it has grown to 4,000,000 members. About 500,000 of entirely Russian extraction were both, and a large number of propaganda flights were successfully carried out.

#### Famous Flights Presented

In 1925, the Avalokhia organized the Pekin-Tokio flight in which five planes started and 12 of them completed the route and had a formal landing near Pekin, reached their destination and made the return to Moscow.

Recently the Avalokhia sought in establishing a World record in connection with the flight of Evans and Wells trip around the World, when the Russian official pilot Karpoff overtook the Evans-Wells-expedition from India. In a twenty-five hour flight Karpoff has been able to cover 10,000 miles by aerial flight. Moscow-Evans and Wells recorded in making the flight the World record in 26 days, 24 hrs., 36 min., bettering the previous record by over 7 days.

The Avalokhia in 1926 arranged four international flights. The first to Tashkent, by way of Kostan-Minsk-Moscow and Woda-Baku, and return; the second to Moscow-Königsberg-



View of Berlin looking directly down on the Hindenburg airship moored over the city.

Berlin-Potsdam-Potsdam and return; the third from Moscow to Angora via Charbuk and debarked and return. This trip included crossing the Black Sea from Sevastopol.

The fourth trip was Moscow-Berlin-Potsdam-Vienna-France-Winnebosc.

On the anniversary of the dissolving of the Armistice on July 12th, a parade of airships took place on the Treaty

Central Aeroplane. On that anniversary there were launched propaganda flights by approximately 200 airplanes, the trips being made to the various cities and industrial and agricultural centers of the Soviet Republics.

During the month of January an express flight was made between Moscow and Peking, using 1000 hrs. Five planes were used. (To be continued—next week, Moscow flight.)



The Free City of Berlin, the first stop on the Berlin-Moscow flight.

## The Present Airship Situation in the U.S.

Commander Rosendahl Addresses *Tus Beta Fiu Airships*

PUTTING IN a strong plea for the continuation of experimental work in the development of rigid airships for both national defense and commercial operation, Capt. Eddie Charles E. Rosendahl and a very interested Society, Feb. 9, before the discussion group of the Tus Beta Fiu, the more advanced of the Roaring Twenties Building, New York City. Mr. K. D. McLean presided at the meeting and introduced Commander Rosendahl as the senior surviving officer of the dirigible fleet, and one of the leading authorities on rigid airship operation in the United States.

The speaker then opened his remarks with a brief history of his connection with the popularization of rigid airships.

In evidence, which may well be described as 80 or 90 per cent bygone, he approached the man to whom rigid airships had already been put and mentioned some of the outstanding performances, one in the present German dirigible, the *Hindenburg*, which leaves Berlin and Friedland daily during which we have from 37,000 passengers were carried; the remarkable wartime flight of the L-59 from Bulgaria to Germany East Africa and back, carrying four tons of medical supplies; the flight of the L-54 from England to the South African coast, which set the Atlantic record; the very fine performance of the *Bremen* in its continental cruise of sixteen days duration, during which the workers flew from Lübeck to the West Coast and took part in maneuvers of the Pacific Fleet. On this occasion, the *Bremen* was snap maneuvers along and was scored to temporary safety, which was later necessary to make contact with the north.

Commander Rosendahl mentioned a number of other outstanding dirigible flights and then showed an extremely interesting movie picture film taken in Germany, depicting the development of the Zeppelin type of airship from its earliest stages to the completion of the *ZR-3*, which flew in the United States and can now be seen at the Lakehurst, N. J. station. He then entered into a discussion of the *Hindenburg*, which had in its last flight the large rigid dirigible which became a recognized Berlin in the national defense and a reliable air transport vehicle. Commander Rosendahl believed that Navy ships of the size and character of the Los Angeles would prove of very extreme value in long range oceanic work at sea, but, however, that a lack of operating funds was retarding operations.

One of the major requirements in the satisfactory development of the airship fleet, said, is the recognition, Commander Rosendahl, of the opinion that the high costs at present in use, will not prove satisfactory, owing to the fact that as easily attached to such mode of flying in the world possible savings. From a study of cost of rigid ground sheds, which are very costly, one finds that the cost of building approximately 100 or 200 ft. above the ground cost as much as a modern, rather than old, cost a claim attached to a mooring mast, at that height would take the air and ground and weather conditions improved. This, of course, is a great disadvantage and must be remedied. Commander Rosendahl believed that what he called "the *Hindenburg* method, capable of moving the airship so that it will be close to the ground, will be the type which will prove satisfactory in overcoming the problems of violent weather conditions. In

such case, the size of the ship would be minimized and permitted to roll at any angle laterally, as permitted by the wind direction. Experimental work in this connection, he said, is being carried out by the Navy. Another problem, which is of great interest, is the construction of a rigid airship which is that of the design of large ocean liners. At present, the violent side berthing around berths is a source of considerable trouble when maneuvering airships on the ground, and especially in and out of such berths, and the larvae believed that extensive wind tunnel tests would be necessary in order that berths might be designed and built to suit the unique requirements of a rigid airship. He touched on the possibilities of revolving berths, such as the floating berths used by Capt. Rosendahl on Lake Constance during the early days of his experimental work.

### Holman Gas

Commander Rosendahl expressed the great aspiration of before in airship operation, expansion, he later then that since 1918 is no factor for the use of the highly inflammable hydrogen gas. In this connection, however, with helium at its present high price and limited availability, the problem of finding a gas which was very inexpensive and had led to the development of water storage apparatus, which presented the condensation of water from the exhaust gases of the engines, which condensation compensated for the reduction in load due to the consumption of fuel. The latter pointed out that from 350 lb. of water storage, 100 lb. of fuel was saved and he and the various persons, which had been developed by the Navy, worked approximately 50 percent efficiency, although he reckoned his own's fuel when flying in a fog it had actually worked 110 per cent efficiency. The use of water storage apparatus enabled the consumption of helium gas during flight to be reduced to a minimum by employing the gas.

The latter discussed a number of other interesting developments, including those of navigation and the use of long-distance monitoring instruments, he said that experimental work had been carried out on a substance known as Cellphon, which would explore the gold-bearing sites which in new use, as the construction of the gas bags of airships. Cellphon, he described as a rare and extremely valuable mineral in that used in the making of mohair.

### Light Alloys

The use of aluminum in the structural framework of rigid airships had, of course, been almost universal, although Commander Rosendahl drew attention to British practice in use of their new 5,000,000 cu. ft. rigid airships, in which a combination of aluminum and stainless steel was being employed. The latter, which had been developed by the aircraft industry, was made out of. Commander Rosendahl further drew attention to a new light aluminum alloy, known as Eletroloy metal, which he said was 18 per cent lighter than aluminum and showed some promise of being used in future rigid airship construction.

In closing the former asserted the fact that sufficient money had not been appropriated in the past for the continuation of experimental work in the rigid airship field.



Lt. Cmdr. Eddie Charles E. Rosendahl.





# Slotted Wings in Practice

*In Spite of Favorable Test Results, Practical Use of Slotted Wings not very Expensive.*  
 Two Successful Hanley Page Mockups Described.

**T**HIS THEORY of the slotted aerofoil, of which so much was expected when it was first proposed some years ago, appears to have remained dormant, in spite of its promising aspects. It will be recalled that not long after the War there was what might be designated as an epidemic of discussions of the aerodynamic possibilities of incorporating the slotted wing principle in both military and commercial aircraft.

Shortly after Herr Lufthansa and F. Hanley Page espoused this theory almost simultaneously, the compound wing, as it was variously known, became the subject of experimentation in many of the leading aeronautical laboratories of the World. The promising results obtained from these experiments only served further to emphasize that it could only be expected to be a compound aerofoil, the principle of which was very simple. Much surprise has, therefore, been expressed in many aeronautical circles because of the apparent disregard with which designers have treated these experimental results. One or two machines have, however, been produced, incorporating these new principles, among which may be mentioned the Albatross and one or two machines produced by the Hanley Page Company in England.

## Totis Show Promise

As demonstrated by wind tunnel tests, the addition of slots to any wing section will have the effect of increasing the lift of that wing, the extent of which increase depends upon the particular wing section and upon the number and form of slots. It will be clear, therefore, that the advantages due to that increase in lift may be realized in different ways in the design of an aircraft. Considering, for example, the use of a trailing edge slot, the lift coefficient of a wing may be increased from 7.0 to 10.0 per cent, depending, as already men-

tioned, upon the wing section used. Taking the case of a machine of a given total weight, maximum speed and wing area, the addition of the slot system will have the effect of reducing the landing speed, owing to the increased lift achieved with the slot open, the top speed remaining the same with the slot closed. It is generally found that a reduction of 10 to 20 per cent can be obtained in this way. From this it is evident that the take-off and landing runs will also be considerably reduced and the angle of climb increased.

On the other hand, assuming that the total weight of the plane and the landing speed are to be reduced constant, the employment of slotted wings may result in a marked reduction in the wing area necessary—a reduction proportional to the increase in lift. In this case the cost of the aircraft with this object in view, the overall wing loading will be increased, with the result that there will be an increase in the maximum speed, that is to say with slots closed, although it should be remembered in such cases that the maximum ceiling may be reduced. The only effect on the model tests is, however, anticipated, and it seems likely that it has been overdone to the effect that many see has not been made of the slotted wing principle in practice.

As demonstrated by wind tunnel tests, the addition of slots to airfoil sections changes results in a marked decrease in the landing rate of descent, and, therefore, it is reasonable to suppose that there may be some advantage in employing slotted wings in seaplanes which are to be used on shipboard. With this object in view, Hanley Page of Cricklewood, London, produced the Hanley Page Heston biplane seaplane. This is a two-seat biplane, designed for carrying two passengers in the deck of an aircraft carrier, its outstanding feature being the ability in take-off in a very short distance, used to carry a heavy torpedo and still maintain the necessary

February 14, 1927

AVIATION



The Hanley Page Heston, two-passenger, 200-hp. plane equipped with slots (200-hp. Ruster Jacobs air-cooled radial engine). The slots extend from the leading edge down to open the trailing edge slot. (Courtesy the Hanley Page Co.)

distance of take-off and landing rate. The Hanley Page Heston already ranks as the British Air Ministry's "second best" about the middle of last year and since that time the aircraft has been considerably improved, and another experimental plane of similar type has gone under construction.

The Heston is a normal biplane, equipped with a Hispano-Luxo engine of 200 h.p. It is a two-seater, with a total loaded weight of 3,600 lb. and a wing area of 300 sq. ft., a figure which will immediately appear as rather low compared with the weight of the plane, but which is rendered possible by the slotted wings employed.

## The Slot Arrangement

A description of the slots will be interesting. The wings are of cantilever type with flaps extending along the trailing edge. The outer extensions of these flaps or all four wing panels are capable of being operated separately as ailerons. The flaps and ailerons are so arranged that when they are depressed, a slot at the hinge automatically opens, permitting the air to pass through and over the upper surface of the top wing panel. The flaps and ailerons also have a slot extending over the bottom spine and forward of single monoplane-style wheels. As in the case of the trailing edge, the leading edge slot is also divided in such a way that the outer extremity automatically opens and closes with the lowering or raising of the ailerons on the two sides, respectively. The main outer edge of both the trailing edge slot and the leading edge slot in each wing panel are operated by the pilot as a separate control, not the purpose of changing the lift coefficient of the wings.

It will be seen then that in the Heston is included a system of lateral control which enables the slotted principle, together with a system of slots for raising and lowering the trailing edge, to be used for changing the starting point of the plane. It will be readily apparent that due to the great changes in lift resulting upon the opening and closing of the slots, the incorporation of the slot principle in the

normal lateral control system of an aerofoil will result in the large changes in rolling moment, and, therefore, in lateral control, this would be possible with normal ailerons.

A close examination of the accompanying photographs will give a clear conception of the interesting system incorporated in the Heston.



A close-up of the slot mechanism of the Hanley Page Heston. (Courtesy the Hanley Page Co.)

Later last year, the Hanley Page Company produced another aircraft, incorporating slotted wings, known as the Heston. This machine, however, is a four-passenger, three-engine, commercial plane of the monoplane type. Apparently, it was originally intended to produce a mail carrying aircraft, but the machine was finally fitted as a passenger plane and has a capacity of 10 passengers. It is simple construction for four passengers, with pilot and co-pilot occupying an open cockpit in the nose of the plane. (Continued on p. 642)



A front view of the Hanley Page Heston. (Courtesy the Hanley Page Co.)

# PICTURES THE NEWS



**PIERCING THE NIGHT** The continuous searchlight of the 400th Anti-Aircraft Regiment, 100th Division, French Expeditionary Force, illuminates the Eiffel Tower which, because of the lack of light in Paris, has become a major target for searchlights used in the defense of the city.



**A HAVEN FOR AIRCRAFT** An aerial view of March Field, near San Diego, Calif., the site of a naval air base for lighter-than-air aviation. A statue of the general is located in a hollow to salute the machine-maneuvering "birds" in the sky. At present it is intended to have the Army, the Navy and the Marine Corps.



P. R. A. Photo

**OF HAWAIIAN FLIGHT FAM** The two P-2s of the Hawaiian Flight Family are in session with the T-2s. These planes are now designated the T-2s and S-2s.



**POISING THE AIR** The tall searchlight tower from which the searchlights are directed at Berlin, Germany, from which a searchlight is being operated to locate the American aviators and balloons due to pass it in the night of Feb. 12. The searchlights were turned on and prepared for the day.

**SAFETY PRECAUTIONS** An aviator on the left takes advantage of preliminary safety checks prior to landing. The pilot, dressed in a flying suit, has his hands clasped behind his head in a gesture of safety. The right hand holds a leather helmet which will be removed on the field.

**ATTESTED** The man in Glare Aviators was selected at the Model Avia Exhibition. The machine is fitted with a 100-hp Hispano-Suiza engine and has a top speed of 100 miles per hour. The engine has started again as it exploded.



Underwood and Underwood



# Side Slips

By ROBERT B. MURKIN

Noting that the Fokker monoplane, of which Meigs, Byrd and Bassett were to be the pilot, will be placed in a museum which Mr. Ford is establishing at Dearborn, Mich., and also noting that the Amesbury-Edwards-Steale deplane is still flying, the only press, we are wondering what place will be given to the Sling when that ship is placed in a museum. We think it should be chosen as one of the famous flying ships of the twentieth century.

By the way, the use of the primary purpose of the Norge's flight to promote unity among the nations represented in the crew!

All of the flying fields seem to be in terrible shape because of the recent snowing, raining, freezing and thawing, and a number of friends have reported that the experience that obtained at Philadelphia's Made Tarns Field during last year's snow, has stood them in good stead. Mr. H. L. C. Goss, who has made a specialty of large flying fields, is quoted when reported to be a good example of a clever and a honest flying expert. As he was shot to pieces by a bomb they were being worn by a flying who was trying to pack his plane out of the puddle where he had just landed. Close inspection of this story will reveal that it is a moderately serious of the horse-and-buggy business in the way that we used to have in the early days of the Civil War, when we were not so much in need of them that we could afford almost anything. Just at present we have not the slightest idea what to do for the rest of this winter, but we must fill it with something. If we ever let as much

as one such ship by unduly we would never recover it from the Advertising Department.

The newspapers state that King and Queen of Belgium are very fond of flying, and do not let a lot of it, and we might be able to bring issue out of a comment out of that story. For instance we could say that if they had an Aces for a pilot, there would be possibilities of a high straight which might be worth a two-mile drive, especially when we consider that it mostly takes a torpedo or some other pack for flight. We could say this is partly poor stuff so we had better not use it. On second thought, however, if it is down on the paper, we might as well let it slide.

Most of the airplane companies appear to be well supplied with orders at the present time, and as a fairly prosperous condition. The last indication we have of this is the fact that all of the airplane, motor, engines and company catalogues are filled with the latest models of planes and damping engines. Whenever a shop gets as joyful and efficient, and starts talking in large figures about the future of aviation, we are sure he has an order in his factory and has these sales to meet at the back within a week.

One reason we are short of material this week is that California has taken the better of Wisconsin. California is the new newspaper nation. Usually we are based on the California basis to think up at least one new sheet each week, which is featured in the newspaper, and which sometimes receives a thought or two. Lately, though, there has not been a paper out of them. Whether this has been credited with the man who started 2500, breaking a pin in half on his last roll, and the other end of a sheet being two rods and four lbs. available for landing gear. The parts were two points ahead in the competition, and it is about time California did something about it, or we will be at an inferior next week, too.



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a pilot and three passengers and the flight was made for the duration of the war.

The plane was a Fokker Universal, powered with a 280 hp Wright Whirlwind engine. At 6:15 p.m., Capt. C. H. Rodriguez, former technical expert of the Imperial Airways, Ltd., of Great Britain, and now with the Caribbean Air Transport Company, piloted the plane from the Teguise Airport, at Hacienda Hondo, to the Hotel Savoy, at 8:15 p.m.

The route the plane took was over the following: Bahia at 12th Street, down Broadway, turning Times Square, and the Metropole and the Woolworth Building. In landing, two Hugo Sivrs and a 280,000-watt p. final light were used.

**San Diego, Cal.**

Lieut. F. W. Norton, U. S. N. R., recently reported at San Diego from the Bureau of Aeronautics for duty on the Pacific coast. He is to be in charge of the Bureau's work here. He has been very actively engaged in coordinating the flight training course being given at the Naval Academy and the Air Station at Hampton Roads with the course at this station. If his recommendations are carried out the station believes it will smooth out a great many difficulties at present encountered.

Class Five of Student Aviators reported on Jan. 30, a number of which are training at a preliminary aviation instruction school, while 11, as reported, will be completed before the fleet sails South in February.



#### Advisory Officers' Quarters at Scott Field

Contractors will be given contracts for offices at a cost of \$300,000 at Scott Field, Ill., as asked as a bill recently introduced in the House of Representatives by Representative Irvin of Belleville, Ill. The bill includes a provision for the use of surplus Department of War property to pay for the cost of construction.



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#### Washington to Pensacola With J-5 Engine

Lieut. Comdr. Ned Dean, U. S. N. R., and Lieut. S. H. Wooster, U. S. N. R., returned recently from an extended flight from Washington to Pensacola. This cross country trip was made in a Vought J-5, equipped with a Wright 240 engine and a nine foot diameter blade stainless steel propeller, adjusted to turn 3,000 rpm. at full throttle in low speed flight.

A careful record was kept of the fuel and oil consumption and the results obtained were very satisfactory. The engine was operated normally at 1,600 to 1,650 rpm. with intelligent use of the carburetor mixture control to obtain the best fuel economy. The average consumption with certain fuel was 20.7 gal. per hr., and with high leaded commercial fuel 11.9 gal. per hr.

During the trip to Pensacola, it is reported that a leaking exhaust rocker arm caused three of the cylinders to cut out, but the trip was continued with no serious result except a deep in the revolution and an increase in fuel consumption. No trouble was encountered on the return trip, which was made in 9 hr. 52 min., and upon arrival of the plane at Anacostia, Washington, the engine was stopped and removed the service immediately with no adjustment to the power plant, the small repair necessary in the engine.

#### Ad. Maneuvers at Kelly Field in April

Exhibition air maneuvers have been planned to be held at Kelly Field, Tex., in April, 1927, and Brig. Gen. James E. Field, Commandant of the Air Corps, will probably be in command. Some 200 planes will take part in the maneuvers which will be the largest yet attempted in the United States. There will be attack and defense problems and bombing contests. The principal groups from Kelly Field, Tex., the attack group from Fort Crockett, Tex., and bombing and observation planes from Fort Sill, Okla., will proceed to Kelly Field. All types of planes will be in the maneuvers.



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ROSS MITCHELL PHOTOGRAPH BY D. GILBERT, CAL.

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## American Aircraft Directory

Many inquiries have recently been received by *Aviation* for information regarding some firms, managerial addresses, commercial pilots, airports and aircraft operators throughout the United States. To meet this demand, the American Aircraft Directory will be published in 1927 in book form with many maps, diagrams, illustrations and advertisements. As many of our readers wish this information immediately, therefore, those who have sent in their names and addresses for the data which has been received to date, it is expected that many additional will be ready and our readers are requested to send any corrections, additions or suggestions that they may have.

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### PUEBLO, COLO.

(Continued)  
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### STATE DIRECTORY

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Commercial Field

Location: 3 1/2 mi. N. of city.

Description: 2,400 ft. by 1,500 ft.

Possibilities: Repairs and supplies available.

Stroller Field, owned by the Standard Auto Co.

Location: 8 miles N. of city, with

hotel and lake on the S.

Description: 4,000 ft. by 3,000 ft., Alt. 5,130

ft.; marked.

Possibilities: Supplies, and all necessary

services.

Frontier Ranch Field, controlled by

Chamber of Commerce

Location: 5 1/2 mi. N. of city, and 2 1/2

mi. E. of city.

Description: 1 mi. sq.; Alt. 5,800 ft.;

marked.

Possibilities: Supplies available from city.

**DENVER**

Colorado Springs Flying is the city.

**FLYING FIELDS**

Hawthorne Field, operated by Atmos-

pheric Airlines Co.

Location: 1 1/2 mi. E. of city, and 8

ft. above sea level.

Description: 1,200 ft. sq.; Alt. 5,200 ft.

Possibilities: Supplies available.

Lovry Field, controlled by Colorado Na-

tional Guard, address Commanding officer

Lovry Field.

Location: 3 mi. N. of capital.

Description: 2,600 ft. by 2,000 ft.; Alt. 5,300

ft.; marked.

Possibilities: Supplies, and repairs

available.

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See **SEED**.

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Location: 1 1/2 mi. S. of city.

Description: 1,500 ft. by 600 ft.; Alt. 8,000

ft.

Possibilities: Supplies available in city.

**ESTES PARK**

**FLYING FIELD**

Stanley Aviation Field, address Stanley

St.

Location: 1 mi. from post office.

Description: 1,600 ft. by 600 ft.; Alt. 5,600

ft.

Possibilities: Supplies and repairs available.

**LAMAR**

**FLYING FIELD**

McGinnis Landing Field, address McGinnis

Chamber of Commerce

Location: 2 1/2 mi. E. of center of town.

Description: 1,600 ft. sq.; Alt. 5,350 ft.;

marked.

Possibilities: Supplies and repairs available.

**LEADVILLE**

**FLYING FIELD**

Bryson Field, municipal.

Location: 2 mi. N. of city.

Description: 1,200 ft. sq.; Alt. 12,200 ft.

Possibilities: Supplies available.

**PEUER**

**FLYING FIELD**

McGinnis Field, address Commercial

Chamber of Commerce

Description: 3,000 ft. by 3,600 ft.; Alt. 4,600

ft.

Possibilities: Supplies and minor repairs available.

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**RASTMAN** serial engine model 125, with twelve inch less  
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